



# The Conservation Strip

CONSERVING NATURAL RESOURCES FOR A BETTER ENVIRONMENT

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## WHAT IS A TMDL?

Twelve streams in Fauquier County (either the whole length or a designated segment) are on the Virginia 303(d) impaired streams list. The streams/segments are: Thumb Run/West Branch, Thumb Run, Rappahannock River, Carter Run, Great Run, Marsh Run, Brown's Run, Cromwell's Run, South Run, Cedar Run, Licking Run and Deep Run. As of June 2003, 1090 Virginia streams are on the impaired list and will require a Total Maximum Daily Load (TMDL) study. Since the term "TMDL" will be in the news for the next several years, the following gives more information on the TMDL process.

**WHAT IS A TMDL? Total Maximum Daily Load (TMDL)** is a term used to describe the amount of pollutant that a waterbody can receive and still meet water quality standards, which are regulations based on federal or state laws that set pollutant limits. A TMDL study identifies sources of pollution and reductions needed to attain the water quality standards. TMDLs are required for most waterbodies that are determined to be impaired.

**WHAT IS THE PURPOSE OF A TMDL STUDY?** A TMDL study identifies sources of pollution and the reduction needed to attain water quality standards. Both **point sources**, such as residential, municipal, or industrial discharges, and **nonpoint sources**, such as residential, urban or agricultural runoff, are considered in a TMDL. Virginia's ultimate goal is that all streams attain the proper beneficial uses standards, which are drinking water use, swimming use, fishing use, shellfishing use, and aquatic life use. Most of the impaired streams in Fauquier County have been listed due to an excess of fecal coliform bacteria detected in the water. Although fecal coliform, which is found in the intestines and waste of all warm- and cold-blooded animals, including humans, are not necessarily dangerous to humans, their presence indicates that the water has been contaminated with fecal matter. Individuals who are exposed to this water are exposed to a potential health risk. Waterborne pathogenic diseases include ty-

phoid fever, viral and bacterial gastroenteritis, ear infections and hepatitis A.

**HOW CAN THE PUBLIC PARTICIPATE IN TMDL DEVELOPMENT?** A series of public meetings will be held. The first meeting will inform the public about the impairment, the TMDL procedure, and the modeling process. Public comment will also be obtained. Any subsequent meetings will discuss the on-going TMDL study, including pollutant sources and amount, and the status of the modeling work. Additional small meetings may be held with stakeholders to ensure the information used in the study is accurate. The final meeting will present the draft TMDL study, including reduction targets, for public review and comment prior to submittal to the Environmental Protection Agency (EPA). Public meetings will be advertised in local newspapers, through direct mailing and in the Virginia Register.

**WHAT KIND OF INPUT CAN STAKEHOLDERS PROVIDE DURING THE PROCESS?** Stakeholders are encouraged to provide input into the study process so that the final report is as accurate as possible. Input might include the location of public sewers, septic systems and straight pipes, as well as the condition of the septic systems. Other information consists of the confirmation of livestock and wildlife numbers and their locations in the area, or the identification of additional data sources.

**WHAT HAPPENS AFTER THE TMDL STUDY IS COMPLETED?** The TMDL will be submitted to the EPA where they have 30 days to review and approve the TMDL. Then a TMDL Implementation Plan (TMDL IP) will be developed. Virginia state law requires the development of a TMDL IP, which includes a schedule of actions, monitoring, and costs, to bring the impaired waterbody up to water quality standards. Plan development should start as soon as possible after EPA approval of the

*(Continued on page 5- (TMDL)*

## Meet DCR Regional Manager Marc Aveni

Marc Aveni has been the new Regional Manager for the Virginia Department of Conservation and Recreation (DCR) since March 2003.



**Marc Aveni**  
Regional Manager-DCR

Marc grew up in Fairfax County near George Mason University. On graduating with a BS in Horticulture and an MPA in Public Administration from Virginia Tech, he began working for the Virginia Cooperative Extension (VCE) in 1990 as the Prince William County Horticulture Agent. In fact, Marc jokes that when he first started working for VCE, Bob Tudor, who is a John Marshall SWCD Director, was his boss! Marc then accepted a job as the a northern Virginia Area Extension Agent for Water Quality. Prior to his new position, Marc worked in Richmond as a liaison between DCR and VCE.

Marc and his wife Martha live in Manassas with their 5 children.

## Teacher's Corner

- Will your class study soils, watersheds, water pollution or similar topics sometime during the 2003-2004 school year? The JMSWCD has a variety of **classroom programs** and **activities** to supplement your conservation education curriculum, including an Enviroscope model, to help meet appropriate SOLs. To find out more, call 347-3120, ext. 3, and ask for Catherine.
- Be sure to mark your calendar for the annual **Environmental Resources Teacher Workshop** on **October 23, 2003** at Fauquier High School. This year, the workshop will be "**Ag in the Classroom**", conducted by Wendy Strong, for K-5 teachers. "Ag in the Classroom" will include numerous hands-on activities, grade appropriate lesson plans and other valuable resource materials, all correlated to the VA SOLs. Call the JMSWCD office at 347-3120, ext. 3, to register or for more information.

### Interesting Websites for Teachers:

- [www.nwf.org/kids](http://www.nwf.org/kids) *National Wildlife Federation.* The National Wildlife Federation's "KidZone" has been totally redesigned. It now has activities divided into four age groups, from ages 1-3 to 13 and up. The site is full of age specific coloring pages, games, articles, arts and crafts ideas and many other activities. Be sure to check out the food chain game, "Fish Food", in the Fun and Games section of ages 7-13. It can be addictive!

## EVENT CALENDAR

**Master Gardener Horticulture Hotline.** Call (540) 341-7950, ext. 19, for gardening questions and disease, weed and/or insect identification. The hours are 9-3, Monday - Friday.

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| October 10 | <b>Northern Piedmont Beef Cattle and Forage Conservation Field Day.</b> 8:30 a.m.-3:00 p.m., Hill Crest Farm in Delaplane, VA. This field day will serve as an authorized Virginia Beef Quality Assurance producer certification meeting. Lunch is provided. Free, but pre-registration is requested. Contact Keith Dickinson at (540) 341-7950 or keithd@vt.edu for more information.         |
| October 18 | <b>Fauquier Fall Farm Tour.</b> 10 a.m.-5 p.m. Bring the family for a fun day of interpretive tours at five Fauquier Farms, at Archwood Green Barns and the Corn Maze. This is a rescheduled event. For updated information, please visit <a href="http://www.FauquierAg.com">www.FauquierAg.com</a> or call the Warrenton-Fauquier County Visitor Center at (540) 347-4414 or 1-800-820-1021. |
| October 18 | <b>Pruning.</b> 10:00 a.m.-12:00 p.m. Rady Park, Warrenton, VA. Free. Extension Agent and Master Gardeners will be on hand to show the proper techniques for pruning trees and shrubs, explain when is the best time to prune different landscape plants and what tools are suitable. For more information, contact Paige Thacker at (540) 341-7950, ext. 19, or thacker@vt.edu.               |

# STORMWATER MANAGEMENT

by: Christine Miller, E&S Specialist

Imagine a fifteen acre tract of woodlands. Now imagine that same tract of land with fifty homes on it. When it comes to stormwater management, how do you design a subdivision to mimic the woodland?

Development alters the stormwater hydrology of a site. This is caused both by the regrading of existing drainage patterns as well as increasing the impervious (incapable of passing through) surface cover of the site. Increasing the impervious cover of a site, which includes improvements such as paved roads, driveways, sidewalks, and rooftops, causes an increase in velocity and volume of water leaving the site, commanding the need for stormwater management improvements.

In a pre-developed state, surface flow is slowed as it meanders through the woodland vegetation. Due to this slow movement, each drop of water spends a significant period of time on the site. As the water flows over the earth, a majority of it will infiltrate into the soil. Now, envision that the 15 acre tract of woodlands has its impervious area increased by 80% after all 50 homes are built and the roads paved. When rain hits an impervious surface, there is little to slow it down and there is no chance of infiltration. Furthermore, the time each drop spends onsite is reduced because it does not have to meander through vegetation. At the discharge point of a developed site, water will be moving faster and more will reach the discharge point at once.

The problem with allowing this water to flow off the site in greater quantity and velocity is simple: natural drainage patterns have evolved very slowly over time. A rapid change in the velocity and quantity of flow coming through the channel will cause downstream detriment because the natural conveyance channels cannot adjust their size and shape quickly enough. Streambank erosion and downstream flooding result.

In order to protect the downstream property owners from the erosive impacts of development, Minimum Standard 19 (MS-19) was included as part of the *Virginia Erosion and Sediment Control Regulations, 4VAC50-30-30*. This standard states, "Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater for the stated frequency storm of 24 hour duration...". Further, MS-19 dictates that the site must discharge into an ade-

quate conveyance system according to state standards. This adequacy must be proven by the hydraulic analysis of the existing conveyance system. If a channel or pipe is found to be inadequate, the applicant must either improve the existing system to bring it into compliance, design and implement a method of stormwater detention that will return the site discharge to the pre-development rates, or use a combination of channel improvement and stormwater detention to meet pre-development standards. This is why stormwater management (SWM) ponds are seen in subdivisions. SWM ponds are created to retain fast flowing water off of impervious rooftops and streets and release the flow through an engineered outlet at pre-developed quantities and velocities.

There are drawbacks to solutions such as SWM ponds. It can be argued that there is less groundwater recharge because the water is only in contact with the earth when it reaches the pond. This causes an increase in exit flow because less water has infiltrated. Because there is less infiltration and less filtering of the water, pollutants that have washed from impervious surfaces, such as oil from a driveway, are more likely to be present in the water.

Alternatives to a stormwater retention or detention basin include infiltration trenches, constructed wetlands, rain gardens, and water quality swales. Each of these alternatives has certain site restrictions. For example, infiltration trenches cannot be used on sites with high water tables. Some designs, such as constructed wetlands, require much more land to create than would a SWM pond.

Although alternatives exist, engineers usually choose to construct a pond. While a stormwater management pond has drawbacks that could potentially be avoided through other management strategies, having ponds is far more desirable than having no stormwater control at all. A properly constructed pond can prevent the flooding and erosion that is so damaging to downstream property.

As you can see, there are still many questions as to how to make parking lots and homes act like a forest. As technology continues to make progress and jurisdictions share information about what works and what doesn't work, stormwater management will improve.

# VIRGINIA AGRICULTURAL BMP TAX CREDIT PROGRAM

Virginia state tax credits are available for 45 agricultural best management practices (BMPs) under the VA Agricultural BMP Tax Credit Program. This program allows agricultural producers with an approved conservation plan to qualify for a 25% tax credit on eligible BMPs. The tax credit amount cannot exceed \$17,500 or the taxpayer's total state income tax liability for the year. However, tax credits may be carried over for up to five years. BMPs must be approved by the John Marshall SWCD prior to the implementation for the credit to be granted. This includes tax credits for nutrient management plan writing, soil testing and pest scouting.

There are several tax credits available to individuals that purchase equipment for the precise application of fertilizers and pesticides. Included are:

- sprayers for pesticides and liquid fertilizers;
- pneumatic fertilizer applicators;
- monitors, computer regulators and height adjustable booms for sprayers and liquid fertilizer applicators;
- manure applicators;

- tramline adapters, and;
- starter fertilizer banding attachments for planters.

The amount of the tax credit is 25% of the equipment cost, not to exceed \$3,750. The individual applying for this tax credit must have an approved nutrient management plan.

Another tax credit available to agricultural producers is for the purchase of conservation tillage equipment. The term "conservation tillage equipment" means a planter or drill commonly known as a "no-till" planter or drill, which has been designed to minimize soil disturbance during the planting of crops. The amount of the tax credit is 25% of the total cost of the equipment, not to exceed \$2,500. This tax credit does not require an approved nutrient management or conservation plan.

For more information on the VA Agricultural BMP Tax Credit Program (or other conservation programs), please call the John Marshall SWCD at (540) 347-3120, ext. 3.

## AG IN THE CLASSROOM WORKSHOP

This year, the annual Environmental Resources Teacher Workshop will provide **Ag In The Classroom** (AITC) training for teachers K-5 on October 23, 2003, at Fauquier High School. AITC is designed to foster an understanding of how agriculture affects the quality of our lives. AITC is aligned with the VA SOLs and provides lessons and fun, hands-on activities appropriate for incorporating into current classroom curriculum. Wendy Strong, AITC facilitator, will provide the training. The workshop is open to educators in public or private schools and in home-schooled settings. For more information, or to register, please contact the JMSWCD at (540) 347-3120, ext. 3, or Eric Dalton at (540) 351-1003.

## 13th ANNUAL TREE SEEDLING SALE

Be sure to check the John Marshall SWCD website ([www.fauquiercounty.gov/government/departments/jmswcd](http://www.fauquiercounty.gov/government/departments/jmswcd)) in October to see a list of the trees offered for this year's sale. All trees, many of them native species, have been chosen for their conservation value and/or aesthetic beauty. More details will follow in the Winter 2004 issue.



Tom Turner helped campers identify macroinvertebrates at the Warrenton Natural History Day Camp this summer as part of a morning-long stream program.

**Civilization itself rests upon the soil.**

**Thomas Jefferson**

TMDL Study. Either state or local agencies can take the lead in developing TMDL IPs.

**HOW WILL TMDLS BE IMPLEMENTED?** The Department of Environmental Quality (DEQ) and the Department of Conservation and Recreation (DCR) intend for nonpoint source TMDLs to be implemented through Best Management Practices (BMPs) and expect that implementation will occur in stages. The benefits of staged implementation are:

- As stream monitoring continues to occur, it allows for water quality improvements to be recorded as they are being achieved;
- It provides a measurement of quality control;
- It provides a mechanism for developing public support;
- It helps ensure the most cost effective practices are initially implemented, and;
- It allows for the evaluation of the adequacy of the TMDL in achieving water quality standards.

**IS THERE A LIST OF BEST MANAGEMENT PRACTICES THAT MIGHT BE EMPLOYED IN AGRICULTURAL AREAS?** Each TMDL is specifically tailored to address the conditions and circumstances that pertain to that impaired water. Many agricultural BMPs used successfully in the past to lower bacteria levels in streams include: livestock exclusion from streams, reducing storm-water run-off of barnyards and feedlots by additional buffering in the riparian zone, and manure management practices. Addressing failing septic systems and straight pipes has been very effective. In general, riparian restoration activities have been shown to be the most effective in reducing bacterial loading.

**IS THERE A LIST OF BEST MANAGEMENT PRACTICES THAT MIGHT BE EMPLOYED IN URBAN AREAS?** Again, each TMDL is specifically tailored to address the conditions and circumstances that pertain to each specific impaired waterbody. Many urban area BMPs used in the past to reduce human bacteria loading from failing septic systems and leaking sewer lines include education on septic-pump-outs and sanitary sewer inspections and management programs. Also beneficial are controlling urban wash-off from parking lots and roads by implementing more restrictive ordinances to reduce fecal loads from pets, improved garbage collection and control, and improved street cleaning.

Additional information on TMDLs and/or BMPs can be found at these sites:

- <http://h2osparc.wq.ncsu.edu/info/bmp.html>
- [www.deq.state.va.us/water](http://www.deq.state.va.us/water)
- [www.dcr.state.va.us/sw/index.htm](http://www.dcr.state.va.us/sw/index.htm)
- [www.dcr.state.va.us/crep.htm](http://www.dcr.state.va.us/crep.htm)
- [www.vdh.state.va.us](http://www.vdh.state.va.us)

**Water is ours to use, to protect, to keep clean, to appropriate wisely so that it will give life to all it touches.**

**Quentin Lockwood**

***The Conservation Strip*** is a quarterly publication of the **JOHN MARSHALL SOIL AND WATER CONSERVATION DISTRICT**, 98 Alexandria Pike, Suite 31, Warrenton, Virginia, 20186-2849.

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## HORSE PASTURE MANAGEMENT

If you are tired of wading around in muck, or are concerned about your horses damaging soggy pastures, a **sacrifice area** may be a big improvement.

Sacrifice areas range in size from 500 square feet to 10,000 square feet, depending on the number of animals and exercise objectives. They are best located on higher ground convenient to the barn. Typical installments involve the removal of grass cover and other organic material, smoothing the site, and the placement of a layer of geo-textile fabric topped with six inches of stone dust. Regular removal of manure and the installation of gutters on barn roofs help to maintain a dry, pest-free confinement area.

A 25% Virginia state income tax credit is available to assist landowners with the cost of installing sacrifice areas. Contact the John Marshall SWCD for further information and assistance at (540) 347-3120, ext. 3

## CEDAR RUN AND LICKING RUN BACTERIA TMDL

The second Public Meeting for the Cedar Run and Licking Run Bacteria TMDL development has been scheduled for 7:00 p.m. on Thursday, October 23, 2003, at the Nokesville Elementary School in Nokesville, VA.

The VA Department of Environmental Quality and Department of Conservation and Recreation are seeking public input on the development of Total Maximum Daily Loads (TMDLs) for bacteria in Cedar and Licking Runs. Levels of fecal coliform bacteria in portions of Cedar and Licking Runs exceed water quality standards and pose a potential health risk. Sources of fecal coliform must be identified and reduced to support the designated swimming and fishing beneficial use goals.

For more information, please contact Kate Bennett at (703) 583-3896 or [kebennett@deq.state.va.us](mailto:kebennett@deq.state.va.us).

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